

Accordingly, claims 15-20 are being withdrawn from consideration as being directed to a non-elected invention (species).

Claims 6 and 10-14 were rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims have been cancelled and therefore this rejection is moot.

Rejection under 35 USC 102(b) and 35 USC 103(a)

Claims 1, 2, 6, 8 and 9 are rejected under 35 USC 102(b) as being anticipated by Pirelli (EP 385 192) or Kleber (FR 2,425,334).

Pirelli (EP 385 192) discloses a tire having sidewall inserts 10, a carcass ply 1 extending across the carcass of the tire and wrapping around the beads 2, and a belt 6 below the tread, all in a fairly conventional manner. The belt 6 is disposed between the tread band 5 and the carcass ply 1, in a conventional manner. The belt 6 may be metallic cords, parallel to one another, and inclined at an angle of 15-20 degrees with respect to the EP, in a conventional manner. (column 5, lines 1-13) The "core cord layer", which is presumably the carcass ply 1, "is surrounded by a strip 7 of textile cords parallel to each other in the strip and inclined between 15° and 20°, preferably in the region of 18°, but disposed so as to intersect the cords of the metal layer [6]." (column 5, lines 14-20).

Pirelli's strip 7 can be distinguished from the present invention in that it is not constructed of "high-modulus reinforcing cords being aligned at a cord angle of about 0 degrees to 5 degrees with respect to the equatorial plane of the tire, the fabric underlay being a wound ribbon of cord-reinforced rubber wherein the ribbon is butt joined against laterally adjacent portions of the ribbon without overlapping." The selection of the cord angle for the present invention is significant because it provides several benefits. A first benefit is, "an additional circumferentially oriented tensioning effect of the reinforcing cords" translates into "an increased circumferential rigidity of the overall tread structure..." "(T)his additional stiffening of the tread increases the natural resonance frequency of the tread structure beyond that of the cyclical flexure frequency associated with high-speed driving....and.. tends to impede or inhibit the formation of standing waves in the normally inflated tire when it is operated at high speed" (page 32, line 17-page 33). A second benefit is that the "circumferential tread-stiffening effect, also impedes this kind of circumferential tread lift during runflat operation. The result is that during runflat operation, the tire of the present invention provides improved vehicle handling as well as decreased cyclical flexural

amplitudes of the sort that can induce heating that can otherwise lead to a shortened runflat operational life of the tire" (page 32, lines 7-16)

A second distinction between the present invention and Pirelli is that "the fabric underlay being a wound ribbon of cord-reinforced rubber wherein the ribbon is butt joined against laterally adjacent portions of the ribbon without overlapping." This is an important distinction because with the ribbon of cord-reinforced rubber being butt joined, there results a) a uniform reinforcement and b) the avoidance of the trapping of air under the overlapping layers of rubber (page 30, lines 16-27). A uniform reinforcement is very important in the production a uniform tire. The avoidance of the trapping of air is important also to avoid the trapping of air under the overlapping layers of rubber to construct a defective tire.

These use of a fabric underlay being constructed of a wound ribbon of cord-reinforced rubber wherein the ribbon is butt joined against laterally adjacent portions of the ribbon without overlapping is an important feature of the present invention and not shown in the prior art.

Accordingly, the invention as now defined in the amended claims is patentably distinct over the Pirelli disclosure.

Kleber (FR 2,425,334) discloses a tire. There is no teaching in this reference of "high-modulus reinforcing cords being aligned at a cord angle of about 0 degrees to 5 degrees with respect to the equatorial plane of the tire, the fabric underlay being a wound ribbon of cord-reinforced rubber wherein the ribbon is butt joined against laterally adjacent portions of the ribbon without overlapping." Instead, the cord angle of the reinforcing cords of Kleber seem to have an angle of 10-25 degrees. See page 2, lines 9-12 and the discussion in the previous amendment regarding this reference. Accordingly, the present invention can be distinguished from Kleber for the same reasons as discussed with respect to the Pirelli reference.

Claims 1, 2, 3, 6, 8 and 9 are rejected under 35 USC 102(b) as being anticipated by Willard (US 5,511,599).

Willard (US 5,511,599) discloses a tire. As discussed regarding Kleber, here is no teaching in this reference of a "high-modulus reinforcing cords being aligned at a cord angle of about 0 degrees to 5 degrees with respect to the equatorial plane of the tire, the fabric underlay being a wound ribbon of cord-reinforced rubber wherein the ribbon is butt joined against laterally adjacent portions of the ribbon without overlapping." In fact, the belt reinforcing members of Willard are at an acute angle (16 to 30 degrees) (See column 10, lines 14-16) with respect to the mid-

circumferential plane P of the tire. Accordingly, the present invention can be distinguished from Willard for the same reasons as discussed with respect to the Pirelli reference.

Claims 3, 4 and 5 are rejected under 35 USC 103(a) as being unpatentable over Pirelli or Kleber or Willard.

Since none of these references teach or suggest the tire structure with the limitations as set forth in claim 1, as discussed before with regard to each reference, the references taken alone or in combination still do not meet the terms of the independent claim 1 or the claims dependent thereon.

Claims 1-9 are rejected under 35 USC 103(a) as being unpatentable over Roesgen (US 5,332,018) or Welter (US 4,262,726) or Iwata (US 4,842,682) or Cluzel (US 5,996,662), taken in light of Oare (US 5,368,082).

Roesgen (US 5,332,018), Welter (US 4,262,726), Iwata (US 4,842,682) and Cluzel (US 5,996,662) are cited, in view of Oare (US 5,368,082) as disclosing radial tires including belts and underlying low angled plies, the cords being at low angles inclusive of zero degrees.

Oare discloses a radial ply tire with a belt structure wherein the cord angles are in the range of 17 degrees to 27 degrees with respect to the equatorial plane as compared to the claimed angle of 0 to 5 degrees in the present invention (see column 2, lines 53-58). Further, there is no teaching or suggestion within this reference of forming the fabric underlay of a wound ribbon of cord-reinforced rubber wherein the ribbon is butt-joined against the laterally adjacent portions of the ribbon without overlapping.

Roesgen also sets forth a belt assembly wherein the radially innermost ply cords make an angle of between 15 degrees and 30 degrees with respect to the equatorial plane of the tire (see column 2, lines 52-54). Besides not teaching or suggesting a tire construction with an underlay having a claimed cord angle of 0 to 5 degrees, there is no mention or discussion in this patent of forming the underlay of a wound ribbon of cord-reinforced rubber as discussed hereinbefore.

Welter also sets forth a belt assembly wherein the radially innermost ply cords make an angle of between 0 degrees and 13 degrees with respect to the equatorial plane of the tire (see column 2, lines 28-32). However, there is no mention or discussion in this patent of forming the underlay of a wound ribbon of cord-reinforced rubber wherein the ribbon is butt-joined against the laterally adjacent portion of the ribbon without overlapping, as discussed hereinbefore. Further, there is no teaching or suggestion of using this underlay with a runflat tire as set forth in claim 1 as amended.

Iwata also sets forth a second layer with the cords inclined at 15 degrees with respect to the equatorial plane as compared to the 0 to 5 degree cord angles of the present invention (see column 5, lines 60-65). Further, there is no teaching or suggestion that the underlay of Iwata is formed of a wound ribbon of cord-reinforced rubber wherein the ribbon is butt-joined against the laterally adjacent portions of the ribbon without overlapping.

Cluzel discloses a tire having a crown reinforcement wherein the cords are at an angle of between 15 degrees and 35 degrees (see column 2, lines 7-13) as compared to the 0 to 5 degree cord angles of the present invention. Also, there is no mention or suggestion in the reference of forming the underlay of a wound ribbon of cord-reinforced rubber wherein ribbon is butt-joined against the laterally adjacent portions of the ribbon without overlapping.

Accordingly, taking the teachings of the combination of references Roesgen, Welter, Iwata and Cluzel alone or in combination with Oare, there is no teaching or suggestion to one skilled in the art to meet the invention, as defined in the claims as amended.

Claims 10-14 are rejected under 35 USC 103(a) as being unpatentable over Roesgen taken in view of Sumitomo (EP 335,588), Kohno (US 5,054,532), Verbauwhede (GB 1,487,426), Oare and optionally Welter. This rejection is moot since the claims have been cancelled.

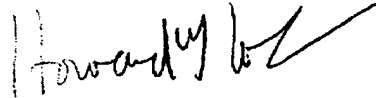
Conclusion

The claims should be allowed.

No new matter is entered by this Amendment.

Applicant has made a diligent effort to amend the claims of this application so that they define novel structure which is non-obvious. If there are still some issues to be resolved, the Examiner is invited to contact the undersigned.

Respectfully submitted,



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